

REMARKS

By the present amendment, claim 1 has been amended by incorporating therein the subject matter of claim 3. Accordingly, claims 3-4 have been canceled.

Further, the preambles of the claims have been amended.

New claim 21 corresponding to claims 1+5, and new claim 22 corresponding to claims 1+7 have been added.

Claims 1-2 and 5-22 are pending in this application. Claim 1 is the only independent claim.

I. Objection to the declaration

In the Office Action, the declaration is objected to. It is alleged that the inventor's citizenship is improperly indicated (i.e., that "French" should be "France").

The objection is respectfully traversed. The term "French" is the adjective form that unequivocally means "of France". Thus, the words "French citizenship" mean "citizenship of France" without any ambiguity, so that the declaration complies with the requirements that "[t]he applicant... shall state of what country he is a citizen" (35 U.S.C. 115) and that "[a]n oath or declaration... must... [i]dentify the country of citizenship of each inventor" (37 C.F.R. 163(a)(3)) as discussed in the USPTO guidelines (MPEP 602). It is noted that the Declaration was not objected to in the initial review by the USPTO.

In view of the above, it is submitted that the objection should be withdrawn.

II. Objections to the claims

In the Office Action, claims 1-20 are objected to. More specifically, the following

expressions in the preambles are objected to:

- “Method” in claim 1, line 1 (“A method” is suggested)
- “Method” in claims 2-10, line 1 (“The method” is suggested)
- “Internal combustion engine” in claim 11, line 1 (“An internal combustion engine” is suggested)
- “Motor” in claim 12, line 1 (“A motor” is suggested)

The claim preambles have been amended as suggested in the Office Action. Accordingly, it is submitted that the objections should be withdrawn.

III. Art rejections

In the Office Action, claims 1-2, 4, 6, 9-12, 14, 16, and 19-20 are rejected under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over, US4185599 to Onoda et al. (“Onoda”).

Further, claims 1-3, 5, 9-13, 15, and 19-20 are rejected under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over, US4572114 to Sickler et al. (“Sickler”).

Still further, claims 1-3, 5, 9-13, 15, and 19-20 are rejected under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over, US5183011 to Fujii et al. (“Fujii”).

Also, claims 7-8 and 17-18 are rejected under 35 U.S.C. 103(a) as obvious over any of Onoda, Sickler, or Fujii in view of US6386177 to Urushihara et al. (“Urushihara”).

Reconsideration and withdrawal of the rejections is respectfully requested.

As a preliminary, claim 1 has been amended to recite the subject matter of claim 3, which is not included in the rejection based on Onoda.

Further, Sickler focuses on the so-called retarded mode in which a compression release event is produced only once during two revolutions of the crankshaft, which basically converts the combustion engine into an air compressor (see Sickler at col. 1, lines 23-25). During this stage, the fuel injection is totally or nearly totally shut off (see Sickler at col. 4, lines 15-17), and in any case, there is no combustion phase, because combustion would be contrary to the objective of increasing the compression effect. In other words, Sickler does not include a combustion phase for the air/fuel mixture contained in the chamber, as recited in present claim 1.

Still further, Fujii concerns a hydrogen engine. Fig. 2 of Fujii, to which reference is made in the Office Action, shows only an exhaust valve single-opening curve 25, an intake valve single-opening curve 26, and a hydrogen supply valve single-opening curve 27 (at various supply levels). In other words, Fujii does not disclose two opening curves. More specifically, as explained at col. 3, lines 36-53 of Fujii, the valve timing of Fujii is as follows: a single exhaust stroke followed by a single suction stroke and an injection at the beginning of the compression stroke. So, notwithstanding the fact that Fujii refers to a hydrogen-fuelled engine, Fujii totally fails to teach or suggest a system with two admission steps per cycle, as recited in present claim 1.

In contrast, in the presently claimed invention, valve timing and injection and combustion phase are timed with a view at making it possible to reduce or avoid a knocking phenomenon, and in particular, the exhaust closing time (FE) is between the first intake opening time (OA1) and the second intake opening time (OA2), and the first intake closing time (FA1) precedes the second

intake opening time (OA2), as recited in present claim 1. The features of the presently claimed invention and its advantages are not taught or suggested in any of the cited references. Therefore, the present claims are not obvious over the cited references taken alone or in any combination.

In addition, with respect to the dependent claims, it is submitted that the cited references fail to teach or suggest the combined features of each of these claims. Therefore, each of these respective claims is not obvious over the cited references taken alone or in any combination.

In particular, with respect to claims 7-8 and 22, it is submitted that a person of ordinary skill in the art would consider that the general teaching of Urushihara that fuel injection may start between intake opening and exhaust closing would be applied with respect to the first (main) intake phase and not to the second (auxiliary) intake phase of Onoda, in particular because the injection nozzle is located in the first intake passageway and because the second intake phase is used to assist in expelling residual gases, not to initiate combustion. Therefore, present claims 7-8 and 22 are not obvious over the cited references taken alone or in any combination.

In view of the above, it is submitted that the rejections should be withdrawn.

In conclusion, the invention as presently claimed is patentable. It is believed that the claims are in allowable condition and a notice to that effect is earnestly requested.

In the event there is, in the Examiner's opinion, any outstanding issue and such issue may be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Amendment
U.S. Appl. No.: **10/562,417**
Attorney Docket No. **LAV05006**

In the event this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of the response period. Please charge the fee for such extension and any other fees which may be required to our Deposit Account No. 502759.

Respectfully submitted,

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